

### **REMARKS**

Upon entry of the foregoing amendment, claims 1-6, 9, 10, 13-16, 18-32, 34-39, 41 and 42 are pending, with 1, 9, 18, 21, 27, 32 and 38 being the independent claims. Claims 11, 12, 17, 33 and 43 are canceled without prejudice to or disclaimer of the subject matter therein.

### **Rejections Under 35 U.S.C. 103(a)**

Claims 1-6, 9-39 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,931,095 to Koenck et al. ("Koenck"). Regarding claims 1 and 18, the Examiner states that Fig. 4 of Koenck illustrates a system configured to irradiate a pallet with x-ray radiation "having first and second states for directing radiation in a first plane toward the pallet in the first state and for not directing radiation toward the pallet in the second state." The Examiner recognizes that there is no disclosure in Koenck of either "a control for energizing the source of radiation" or "a system wherein the motor rotates the pallet through a particular angle each time that the source of radiation and the holder are in the second state." The Examiner argues that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Koenck et al. to incorporate the missing features. Applicant respectfully traverses this rejection.

Claim 1, as amended recites a system for irradiating a pallet that includes a source of radiation that has first and second states and a motor for rotating the pallet during the second state of the source of radiation. In the first state, the source is energized and directs radiation toward the pallet. In the second state, the source is de-energized so that it does not direct radiation toward the pallet. Similarly, claim 18, recites a source of radiation having energized

and de-energized states and a drive member for rotating the pallet when the source is not energized.

Koenck fails to disclose or suggest all of the features recited in claims 1 and 18. In particular, there is simply no disclosure of a radiation source that is configured to be energized and de-energized during an irradiation process. In fact, every embodiment described in Koenck is configured so that the radiation source would not be energized and de-energized during the irradiation process. For example, in the embodiment shown in FIG. 11, a pallet is moved in a single direction past four different radiation sources in order to fully irradiate the pallet. Koenck col. 7, lines 1-12 and Figure 11. As a result a lengthy irradiation portion of the conveyor system would be required to fully irradiate the pallet. In addition, as shown and described with respect to FIGS. 12 and 13, a pallet may be lowered or raised into a chamber that is large enough to allow the pallet to be both entirely above and entirely below one or more irradiation sources so that the pallet may be rotated while it is either above or below the radiation source. Koenck col. 7, line 13 – col. 8, line 17 and Figures 12 and 13. Such embodiments would also require an exorbitant amount of space to create sufficient chambers for irradiating the pallet. As a result, Koenck neither discloses nor suggests a source that is configured to be energized and de-energized during an irradiation process. The Examiner provides no other source for either a teaching of a system configured to rotate a pallet while a source is de-energized or a suggestion to create such a system.

Moreover, the ability to energize and de-energize the radiation source, as recited in claims 1 and 18, provides a significant advantage over the systems described in Koenck. Because the radiation source may be energized and de-energized in the present invention, significantly less space is required for manipulating a pallet during an irradiation process.

In view of the above, it is respectfully submitted that claims 1 and 18 are patentable over Koenck. Claims 2-6 depend from and include all of the features of claim 1 and for at least the same reasons described above, claims 2-6 are patentable over Koenck. Claims 19 and 20 depend from and include all of the features of claim 18 and for at least the same reasons described above, claims 19 and 20 are patentable over Koenck.

Regarding claim 21, the Examiner asserts that Koenck discloses a system comprising a source of radiation, a converter and a scan horn, but not a dipole magnet. The Examiner argues that it would have been obvious to modify the system of Koenck to incorporate a scan horn and a dipole magnet. Applicant respectfully traverses this rejection.

Claim 21 recites a system for irradiating a pallet that includes a source of radiation having energized and de-energized states, wherein the pallet is not rotated when the source is in the energized state. As described above, Koenck does not disclose or even suggest a system that is configured so that the pallet is rotated when the source is de-energized. As a result, Koenck fails to disclose or suggest all of the features of claim 21. Therefore, claim 21 is patentable over Koenck. Claims 22-26 depend from and include all of the features of claim 21 and for at least the same reason are patentable over Koenck.

Regarding claim 32, the Examiner asserts that Koenck discloses all of the recited elements with the exception of a magnetic lens assembly for converging radiation from the source to a particular position in the pallet in a direction different from a first direction. The Examiner argues that Koenck teaches a compound-bending magnet which is equivalent to the magnetic lens assembly. Applicant respectfully traverses this rejection.

Claim 32, as amended, recites a method of irradiating a pallet including the steps of energizing a source of radiation, directing radiation to the pallet, moving the pallet past the

radiation, de-energizing the source of radiation after the pallet has moved in the direction substantially perpendicular to the first plane, and rotating the pallet on an axis extending in the first plane through the pallet while the source is de-energized. As described above, Koenck does not disclose or even suggest a system that is configured so that the pallet is rotated when the radiation source is de-energized. As a result, Koenck fails to disclose or suggest all of the steps of the method of claim 32. Therefore, claim 32 is patentable over Koenck. Claims 34-37 depend from and include all of the features of claim 32 and for at least the same reason are patentable over Koenck.

Regarding claim 38, the Examiner asserts that Koenck discloses a system comprising a source of radiation, a converter and a scan horn, but does not explicitly disclose a system wherein the converter has an arcuate periphery. In one instance, in response to Applicant's previously submitted arguments, the Examiner states that "the functionality of the claimed arcuate converter and that of Koenck et al. is similar" and that the alternate design embodiments described in the present application do not alter the functionality of the converter. The Examiner "refers to applicant's admission concerning the shape of the converter (34), as found in the specification (see U.S. Patent Application Publication 2005/0078789, para. [0032]), in which the shape of the converter may be planar or arcuate" for support for asserting functional equivalence. In a separate argument, the Examiner argues that it would have been obvious to modify the converter to have an arcuate periphery and a person having ordinary skill in the art would have been motivated to make such a modification "for the purpose of enhancing radiation propagation along a particular direction." The Examiner relies on a broad statement in Koenck that "workers skilled in the art will recognize that changes may be made" for supporting those assertions. Applicant respectfully traverses the assertion of functional equivalence and the rejection.

Applicant respectfully points out that “[i]n order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalence must be recognized in the prior art, *and cannot be based on applicant’s disclosure* or the mere fact that the components at issue are functional or mechanical equivalents. MPEP 2144.06. Therefore, the Examiner’s reliance on Applicant’s disclosure of multiple embodiments is misplaced for an assertion of equivalence. Furthermore, support for the Examiner’s assertion of equivalence is not included in Koenck because that reference specifically teaches alternate embodiments of the conversion plate having functional differences as will be described in greater detail below.

Claim 38, as amended, recites a system that includes a converter that has a *concave* periphery. The converter is configured so that the charged particles pass to the center of a pallet through the *concave* periphery in a direction substantially perpendicular to the *concave* periphery.

Koenck teaches away from including a converter that has a concave periphery. Koenck describes that an alternative to a planar conversion plate (70) is a compensating conversion plate 98 that is convex. Koenck col. 6, lines 17-33, and Figures 6A and 6B. The convex configuration of the compensating conversion plate (98) provides a thicker central region (102) and thinner upper and lower extremities (100, 104). As described by Koenck, the difference in thickness resulting from the convex shape provides a functional improvement over the planar embodiment by creating a constant path thickness for x-rays passing therethrough. According to Koenck, that constant path yields “consistent x-ray intensity exiting conversion plate 98.” That desire to provide a constant path thickness also results in the x-rays exiting the conversion plate (98) at angles more acute with respect to the convex surface. In the present invention, the convex periphery of the converter allows x-rays to leave the converter *in a direction substantially*

*perpendicular to the concave periphery*” at all locations on the concave periphery. Koenck teaches away from a converter having a concave periphery because a person having ordinary skill in the art would recognize that a converter having a concave periphery would not create constant path thickness for the x-rays passing therethrough as required by Koenck. Therefore, claim 38 is patentable over Koenck. Claims 39, 41 and 42 depend from and include all of the features of claim 38 and for at least the reasons described above are patentable over Koenck.

Regarding claims 9, the Examiner asserts that Koenck discloses all of the recited elements with the exception of a magnetic lens assembly for converging radiation from the source to a particular position in the pallet in a direction different from a first direction. The Examiner argues that Koenck teaches a compound-bending magnet which is equivalent to the magnetic lens assembly. Applicant respectfully traverses this rejection in view of the foregoing amendment.

Claim 9, as amended, recites a system for irradiating a pallet that includes a converter that has a concave rear surface. As described above with respect to claim 38, Koenck teaches away from a converter having a concave rear surface. Therefore, claim 9 is patentable over Koenck. Claims 10 and 13-16 depend from and include all of the features of claim 9 and for at least the same reason are patentable over Koenck.

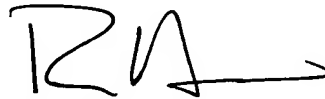
Regarding claim 27, the Examiner asserts that Koenck discloses a system comprising a source of radiation and a first member for rotating a pallet with the exception of magnetic members constructed and disposed relative to one another or a control system for providing a radiation from the source to the pallet. The Examiner argues, however, that such features would be obvious to a person having ordinary skill in the art. Applicant respectfully traverses this rejection in view of the foregoing amendment.

Claim 27, as amended, recites a system for irradiating a pallet that includes a converter that has a concave rear surface. As described above with respect to claim 38, Koenck teaches away from a converter having a concave rear surface. Therefore, claim 27 is patentable over Koenck. Claims 28-31 depend from and include all of the features of claim 27 and for at least the same reason are patentable over Koenck.

### **Conclusion**

It is believed this amendment now has placed the application in condition for consideration and allowance. If necessary, the Commissioner is hereby authorized in this and concurrent replies to charge payment (or credit any overpayment) to Deposit Account No. 50-0683 of Luce, Forward, Hamilton & Scripps.

Respectfully submitted,



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Date

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